8 P. 11

App. F. IX-4

Previous References. (1940-1 War) War File No. 119-40
Serial Nos. 1 to 5

Later References.

GENERAL AND REVENUE SECRETARIAT.

Serial Nos. five only.

Part B for October 1941

SUBJECT.

A. R. P. — Supply of Home Office Literature.

W 119-40-1 W223.
Col 3006

The reply to this communication should be addressed to the Secretary to the Resident in Mysore, Bangalore, by designation and not by name.

No. F.78-40(3)/W.

FROM

THE SECRETARY
TO THE HON'BLE THE RESIDENT IN MYSORE.

To

The Chief Secretary to the Government of
His Highness the Maharaja of Mysore,
Bangalore.

CHIEF SECRETARY 4. JUN. 1941 GOVT. OF MYSORE.

Dated Bangalore, the 3rd June *1941.*

A.R.P. - Supply of Home Office Literature.

SIR,

I am directed to forward, for information, a copy of a letter No.T.22.1.22, dated the 11th October 1940, issued by the County Air Raid Precautions Office, Morpeth, Northumberland, England.

Subd for passd.
A copy may be sent to D.G.P
RS 5/6

I have the honour to be,
Sir,
Your most obedient servant,

GPA 5/6 Yes MS 5.6.41

SECRETARY TO THE RESIDENT.

Chief's VN 5 1941 GOVT. OF MYSORE.

Subd with a draft & fair. GPA 5/6
Jone 5.6.41

Issued No. 215/W dt 5.6.41 to the I.G.P.

Copy of a letter No.T.22.1.22, dated the 11th October 1940, issued by the County Air Raid Precautions Office, Morpeth, Northumberland, England.

----:0:----

The following observations were made after visiting a bombed Area this week.

With the exception of one Anderson Shelter in this district, the protection and siting was good; this one received a fairly large splinter through the upper part of the rear panel.

Paragraph (4) is based on shelters in another Area which, up to the present, has escaped the attention of bombers.

It is suggested that Head Wardens should advise all householders whose Anderson Shelters are inadequately covered to give this matter their immediate attention: -

(1) Shelter during bomb attacks.

The experience of an Air Raid Warden this week illustrates vividly the value of taking immediate cover no matter how small.

He has just finished his beat and was near his Anderson Shelter when he heard a bomb falling. The shelter was sunk leaving only sufficient space for persons to climb down, and was well covered by soil and the entrance was protected by sandbags. He had not time to get into the Shelter, so immediately crouched down by the entrance. The bomb exploded about 30 feet from the Shelter, and the edge of the crater was less than 15 feet away. Apart from his head being bumped on the sandbags he received no injury though the blast caused considerable damage to property round about, and the subterranean damage forced in the lower portion of the Shelter several inches, though this naturally caused no injuries.

(2) Staircases as Shelters.

For those living in districts where no Shelters are provided, it is again mentioned that even in houses which have suffered considerable damage the stairs remained intact, so that persons in these districts may have every confidence in the protection afforded by the staircase.

(3) Warning from falling bombs.

Bombs fall at a slower rate than the speed of sound. Sound travels at 770 miles per hour. German bombs, which are badly streamlined, never exceed 720 miles per hour, and then only after falling from a height of about 17,400 feet. In occasional cases the warning may be as much as 25 seconds, but in all cases there is always sufficient time to enable you to lie down.

(4) Anderson Shelters.

In certain districts it has been noted that the Anderson Shelters are not properly covered, often the protection of the rear of the shelter has been sadly neglected, and in other cases the overhead covering is inadequate. This is particularly the case where it has been found impossible to sink the shelters. The general principle of protection should be: -

The higher the shelter is above ground level, the greater is the necessity for banked lateral protection - (i.e. the lower the slope to roof level, the less is the effect of blast). Shelters protected by material which offers a vertical surface to blast suffer considerably, quite apart from their vulner to splinters.

5) Lessons from a recent raid.

(a) If bombs are falling and you are caught in the open, lie down immediately, preferably in some slight depression, but in any case LIE DOWN.

(b) If you are indoors and have no Anderson Shelter, take cover under the stairs.

(c) In heavy boulder clay disturbance of foundations, fracture of mains, etc., may be expected over a much wider area than when the bomb explodes in gravel or sandy soil.

(d) Do not shelter behind a brick wall, if at right angles to the blast it falls intact.

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VN

W 119-40-2

No. 215/W.
Enc 2

5th June 1941.

The Inspector-General of Police in Mysore.

A.R.P. - Supply of Home Office Literature.

I am directed to forward for your information a copy of a letter No.T.22.1.22, dated the 11th October 1940, issued by the County Air Raid Precautions Office, Morpeth, Northumberland, England, on the above subject.

I have the honour to be,

Sir,

Your most obedient servant,

For Chief Secretary to Government.

The reply to this communication should be addressed to the Secretary to the Resident in Mysore, Bangalore, by designation and not by name.

CONFIDENTIAL. W 119-40-3. 34

No. F.78(4)-40/W.

FROM

THE SECRETARY
TO THE HON'BLE THE RESIDENT IN MYSORE.

To

The Chief Secretary to the Government of
His Highness the Maharaja of Mysore,
Bangalore.

CHIEF SECRETARY 26 JUL. 1941 GOVT. OF MYSORE.

Dated Bangalore, the 25th July *1941*

AIR RAID PRECAUTIONS.

SIR,

I am directed to forward, for information, extracts from a memorandum issued by the Institution of Electrical Engineers to the Ministry of Home Security.

Subd for perusal. One copy of the enclosure will be sent to the CSG. Subd with a draft case for the CSG

I have the honour to be,
Sir,
Your most obedient servant,

RS 29/7

Jm a post up

SECRETARY TO THE RESIDENT.

Tosus 434/W dt 29th July 1941

VN

KRG

to the CSG.

Serial No.

Resubmitted.
for perusal Cpl 29/7

29/7

Law Minister may kindly see the copies sent to C.E.E. also
29/7

30.7.41

Subd with a draft ans for the C.E.E.

31/7

Our copy is in the file

NOTE—Contn. Sheet

Copies may be obtained for the file also Cpl 31/7

Issued 458/W 31/7 31/7 Govt. of the C.E.E.

OFFICE OF THE MINISTER FOR LAW
JUL 29 1941
No 948

FIRE DETECTION DEVICES, WITH SPECIAL REFERENCE TO THE DETECTION OF INCENDIARY BOMBS.

A MEMORANDUM BY THE I.E.E. ADVISORY COMMITTEE TO THE MINISTRY OF HOME SECURITY

INTRODUCTION

In view of the importance of preventing fires developing beyond the stage when they can be dealt with locally by stirrup pumps and other methods described in A.R.P. handbooks, it is considered desirable to publish the following information on the detection of incendiary bombs and fires caused by such bombs. It is evident that any means that will assist in preventing fires developing will not only relieve hard-pressed fire brigades and save valuable property, but also reduce or eliminate illuminated targets for subsequent enemy bombers. Where fire-detection devices are not installed, the first indication that an incendiary bomb has fallen on premises may often be when a passer-by, patrolling warden or policeman notices fire coming through the windows or the roof. Although a watcher is employed a bomb may fall at the other end of his patrol and may remain undetected and burning inside the building for that vital initial period when it could probably be put out with local appliances.

Several methods of detection are possible, and their cost may vary from a few pounds - even, perhaps, a few shillings - for a simple arrangement applicable to a house or small property, to several hundred pounds for the protection of large premises.

It is emphasized that whilst 100% efficiency is unlikely to be secured and that several methods are still untried, there is reason to believe that the number and extent of fires can be materially reduced by preventive measures of the character indicated The Ministry of Home Security have initiated certain experimental and research work in order further to ascertain the capabilities of some systems of fire detection, and it is hoped that the information now given will be implemented in more detail by the issue of British Standard Specifications or Memoranda as the work is completed.

GENERAL

The earliest indications of the arrival of an incendiary bomb are, in general; (a) the effect of impact, (b) the noise of the impact as the bomb hits a roof or other obstruction, and (c) the lights produced as the bomb starts to function. It therefore seems logical that any system specially devised for the detection of incendiary bombs would in effect be a sound detector or a light detector, or a device depending for its operation on the force of impact. Such devices may be regarded as detectors of the arrival of an incendiary bomb:

Subsequent indications of the presence of an incendiary bomb are the results of heat or fire. As at present developed, the well-known appliances for fire detection would, in general, detect the fire caused by an incendiary bomb rather than the presence of the bomb itself, but adaptations of the schemes may be possible whereby the detector operates by virtue of the heat given out by the bomb itself in the very early stages of its combustion.

The type of bomb mainly under consideration in this Memorandum is the 1 kg. magnesium bomb, which has a light output of about 6,000 candle-power and a heat output of about 15,000 B.Th.U.

Any detector which indicates in any way the presence of light or fire can be made to operate, either mechanically or electrically, an alarm or signal device such as an electric bell

bell located in a shelter, control point or other place where some person is in attendance. These detectors can in many instances operate fire-extinguishing devices as well as an alarm.

The general types of detectors, classified according to the initial operating medium, are shown in Fig.1. Their main characteristics and possibilities are reviewed below and a few known schemes are described in some detail. Adaptations of some of the systems described, involving the use of simply-constructed apparatus, have been suggested.

IMPACT DETECTORS

Many forms of impact detectors can be envisaged, and a scheme which has been installed in a building in London makes use of a strong hemp net held under the roof on springs or elastic. Cords are attached to the edges of the net and are taken to pairs of contracts, which are fixed about 12 ft. apart round the roof space. These cords pass through a metal eye which is screwed into the wall, and to the free end of the cord is attached a metal ring or washer of such a size that when the cord is pulled by depressing the net the ring will make contact with the eye but will not pass through it. The eye and ring are tinned and immediately they come into contact an electric bell is rung. In another form of impact detector two layers of wire netting are suspended over the space to be protected, the layers being, say, 2 in. apart. The impact of a falling bomb causes an electrical circuit to be closed by the two layers of netting coming into contact. In buildings where there is already one layer of wire netting under the roof to catch broken glass, an additional layer might be arranged so as to function as an impact detector.

Another system comprises a mesh of series circuits made up of insulated wires connected in such a manner that an interruption in any part of the circuit will cause a signal to be given. These elements are fixed rigidly to a "crash board" of suitable material which, on breaking, would inevitably rupture the circuit at some point or points. They would be available in units of a suitable size for handling the installation. The electrical system would be independent of the mains and could be worked off accumulators or dry cells. The spacing of the wires for the crash board is about 6 in.

These systems suffer from the great disadvantage of requiring quantities of materials which, particularly in the case of wire netting, are urgently required for other purposes, but ingenuity may devise methods using materials more readily available.

One feature of impact detectors would appear to be that the alarm would be given not only by the arrival of an incendiary bomb, but also by splinters and debris. The giving of such an alarm may have utility so long as the alarm is an internal one and does not automatically summon the fire brigade.

The impact of a falling 1 kg. bomb at the moment of first contact with a roof is of the order of 4,200 ft. lb. After the bomb has penetrated the roof, it may be capable of exerting only a small force on any lower obstruction. Impact-detecting devices, therefore, may have to operate within fairly wide limits of impact energy.

LIGHT DETECTORS

Of the various means of detecting the arrival of an incendiary bomb, those depending on the action of the light emitted as soon as the bomb ignites would at first sight seem likely to prove suitable for giving an immediate signal with a minimum of false alarms. These detectors consist essentially of photo-electric or selenium cells arranged to respond immediately to an increase in the light

falling

FIRE-DETECTION DEVICES, WITH SPECIAL REFERENCE TO THE DETECTION OF INCENDIARY BOMBS.

Principles of Detection.

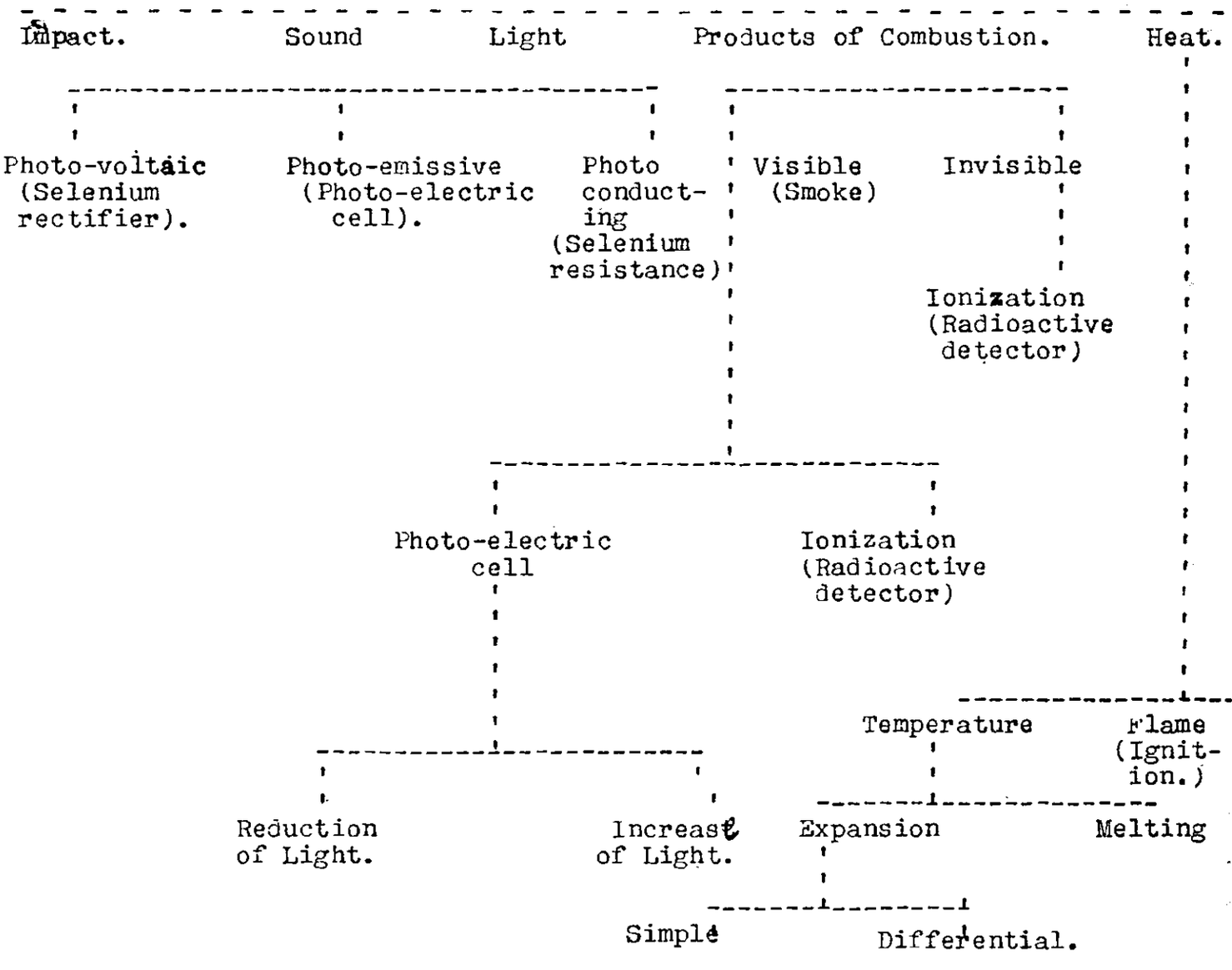

Fig. 1.

falling upon them.

HEAT DETECTORS

The majority of the well-known fire-detection systems used in buildings are of the type which depends on the effect of temperature. Devices more recently developed depend on the destruction of thin material by oxidation or flame. In both cases practically all of them use electrical means for operating the alarm.

The systems depending on the effect of temperature make use of the expansion or melting of material. Of these, the expansion principle is the most common and is put into effect through thermostats, i.e. temperature-operated contact.

COMBINED SYSTEMS

Another system is a combination of fusion and of impact. It is wired in parallel runs at a spacing arranged according to local conditions. The wiring consists partly of double-cotton-covered

covered copper wire and partly of tin fusible wire. If any of the wiring is destroyed by impact the signal is given: fusion of the tin sections produces the same effect. Furthermore, thermostats can be inserted to give a larger range of temperature cover; such thermostats are usually set at 160° F.

FLAME (IGNITION) DETECTOR

A system depending on the destruction of material by flame or contact with smouldering matter consists of a paper strip incorporating a narrow metallic strip of low melting point connected to a battery and a relay. The strip forms a continuous circuit through which current from a dry cell is passed. The strip is connected to an alarm panel and the breaking of the circuit by the burning of the strip operates a relay and sounds an alarm. A comparatively small flame will ignite the paper and thus melt the metallic strip. Its limitations appear to be that a large amount of the strip would have to be used to give a really early alarm.

SMOKE DETECTORS.

There are several well established systems for the detection of smoke at a very early stage of its development. The systems are in general very certain and very sensitive in the detection of even minute quantities of smoke and would detect the fumes given off by a magnesium bomb. The apparatus is comparatively expensive, however, and its installation in an existing building involves a good deal of work.

RADIOACTIVE CELLS FOR THE DETECTION OF FUMES.

The operation of this apparatus is based upon comparing the conductivity of the gas under observation (ambient atmosphere) with a known gas.

FIRE DETECTORS.

There are two main classes of fire detectors, namely those depending on the presence of smoke and those depending on the generation of heat. A further class depending on the use of radio-active materials is referred to below. Many examples of the two main classes are well known and there is an extensive experience available regarding their effectiveness for detecting fire. In some instances the necessary equipment is elaborate and therefore expensive, and in others the alarm is not sounded until at least a modest fire has been started. Adaptations are, however, a possibility, with a view to reducing these drawbacks.

----:0:----

VN

W 119-40-4

CONFIDENTIAL.

29th July 1941.

No 434/W
Encs 4.

The Inspector-General of Police in Mysore.

Air Raid Precautions.

I am directed to forward for information extracts from a memorandum issued by the Institution of Electrical Engineers to the Ministry of Home Security, received through the Residency.

I have the honour to be,

Sir,

Your most obedient servant,

For Chief Secretary to Government.

W 119-40-5

Secret

No. 458/W

Encs 4 Pgs

31st July 1941.

The Chief Electrical Engineer in Mysore.

Air Raid Precautions.

- - - -

I am directed to forward for information extracts from a memorandum issued by the Institution of Electrical Engineers to the Ministry of Home Security, received through the Residency.

I have the honour to be,

Sir,

Your most obedient servant,

For Chief Secretary to Government.